

REMARKS

As a preliminary matter, it is noted that the Examiner has not provided an initialed copy of the Information Disclosure Statement filed on August 28, 2003. A copy of the IDS and stamped-post card showing receipt by the PTO is attached hereto for the Examiner's reference. It is respectfully requested that the Examiner provide Applicants an initialed copy of the IDS indicating that the prior art reference cited therein has been considered and made of record.

The indication of allowable subject matter in claims 5, 9, 16 and 20 is acknowledged and appreciated. In view of the following remarks, it is respectfully submitted that all claims are in condition for allowance.

Claims 1, 4, 5, 15 and 16 are objected to for minor informalities. It is respectfully submitted that the enclosed amendment to the claims obviates this objection. Accordingly, it is respectfully requested that the objection be withdrawn.

The Examiner objects to the drawings under 37 CFR 1.83(a) for allegedly not showing the current sources recited in claims 8, 9, 19 and 20. However, in an exemplary embodiment of the present invention, two current sources are shown in Figure 1 as a resistor 21 connected to the emitter of "first and second transistors" and provided between the inductors 31,32 and ground (*see, e.g.,* page 14, lines 3-4 of Applicants' specification). Solely for clarification purposes with respect to the drawing objection, the expression "current source" in the referenced claims has been changed to "resistor." As would be understood in the art, the structure shown in Figure 1 in which two inductors are connected to one resistor and a structure in which each of the two inductors is respectively connected to one resistor are equivalent circuits.

Claims 1, 8-10 and 19-21 stand rejected under 35 U.S.C. § 112, second paragraph. This rejection is respectfully traversed for the following reasons.

With respect to claim 1, the “inverted RF signal” has been changed to a “virtual inverted RF signal.” Turning to Figure 1, an exemplary embodiment of the present invention is shown where the “inverted RF signal” input into the gate of the transistor 16 is not an actual signal but a virtual signal. The base of transistor 16 on one side of the amplifier can be AC grounded by the condenser, and when an AC signal is input into the base of transistor 15 on the other side, the operation becomes completely opposite to that of the grounded transistor. Specifically, by inputting the AC signal into the base of transistor 15, since the base voltage of the transistors 15 and 16 vary due to the amplitude of the AC signal, the transistors vary between ON and OFF. When the transistor 15 is ON the differential transistor 16 is OFF and vice versa. Hence, an AC signal whose phase is 180° deviated from that of the RF signal can be generated in the base of the transistor 16. This would be the “inverted RF signal”. The virtual “inverted RF signal” is supported, for example, on page 15, lines 10-13 of Applicants’ specification.

With respect to claims 8-10 and 19-21, it is submitted that the remarks above regarding the objection to the drawings along with the enclosed amendments obviate the alleged indefiniteness thereto.

Claims 1 and 12 are the sole independent claims and stand rejected under 35 U.S.C. § 102 as being anticipated by Nakatsuka et al. and Long. These rejections are respectfully traversed for the following reasons.

Turning to Nakatsuka et al., it is submitted that the resistors 133 and 134 are merely for supplying DC to the signal line, and are completely unrelated to the main features of the present

invention. Such resistors are conventionally provided for the DC supply line to display a large impedance when viewed from the signal line, so that an AC signal does not leak into the DC supply line.

Turning to Long, it is submitted that the disclosure therein is also completely unrelated to the present invention. The inductor disclosed in Long serves as a balance generating differential signals from one signal, and the transistor 540 serving as a current source is connected to the midpoint of the balance. Long discloses that differential pairs of the transistor are utilized to generate differential signals from a signal, so as to render Long unrelated to the present invention. According to the present invention, the resistor or the inductor is additionally provided between the bases of the first and second transistors in the differential amplifier of which one side is grounded.

Turning to Kay which was not relied upon by the Examiner in the pending rejections, it too is completely unrelated to the present invention. Kay simply discloses a differential amplifier and a double balanced mixer as general features. Similarly to Nakatsuka et al., the resistors R66, R67 as shown in Fig. 6 of Kay are also resistors for merely supplying DC. Moreover, the connecting method for the condenser is also completely different. That is, Kay discloses providing the condenser between the second and the third impedance or the resistors, whereas the base of the second transistor of the present invention can be AC grounded and used *for generating virtual inverted RF signals*.

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed, either expressly or inherently (noting that "inherency may not be established by probabilities or possibilities", *Scaltech Inc. v. Retec/Tetra*, 178 F.3d 1378 (Fed. Cir. 1999)), in a single prior art reference, *Akzo N.V. v. U.S. Int'l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), based on the

forgoing, it is submitted that neither Nakatsuka nor Long anticipate claims 1 and 12, nor any claim dependent thereon.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1 and 12 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

Based on all the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. § 102 and 103 be withdrawn.

CONCLUSION

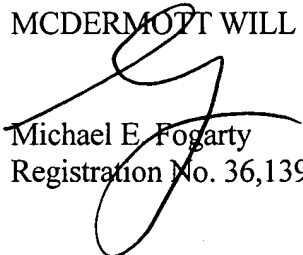
Having fully and completely responded to the Office Action, Applicants submit that all of the claims are now in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

10/649,707

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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